

beetle with an aqueous spore suspension an indeterminate rate of infection occurred, a number of dead, typically attacked beetles being later found under the sprayed plants. Some beetles removed from the sprayed plants after having been observed to feed, subsequently died of the fungus.

Other beetles, first dusted with the fungous spores, and then placed in outside screened cages began dying in four days, and mortality was practically complete within ten days. Healthy beetles were then introduced into these cages, and later, large numbers of these died, exhibiting the typical external growth of *Beauveria*.

The spores of *Beauveria bassiana* may be produced cheaply and in large quantities upon a variety of culture media. The preliminary tests of infection in adult beetles indicate that the fungus may be a promising new natural control agency for the Japanese beetle.—EDGAR G. REX, New Jersey Department of Agriculture, Trenton, N. J.

BOOK NOTICE

Insect Transmission of Plant Diseases. By Julian Gilbert Leach, Ph.D., Professor of Plant Pathology and Head of the Department of Plant Pathology and Bacteriology, West Virginia University; Formerly Professor of Plant Pathology, University of Minnesota. First edition. 8vo., cloth, 615 pp., 238 illus., McGraw-Hill Publications in the Agricultural Sciences, N. Y., McGraw-Hill Book Co., 1940. \$6.00.

That certain insects have an important part in the spread and development of many plant diseases has become more and more keenly realized during the past two or three decades as constantly increasing evidence has appeared in the literature of plant pathology. Since much of this evidence has been recorded only in widely scattered publications, and has never hitherto been adequately summarized or coordinated, it would appear that there is a definite need for this book. Particularly is this true, since the author has endeavored to bring together in one publication all of the more important contributions in this field of study, and has made special effort to evaluate and interpret the evidence in the light of the more recent advances in entomology and plant pathology. In presenting the material, an effort has been made

to be brief. No attempt has been made to discuss all diseases transmitted by insects or all insects that transmit diseases. Emphasis has been placed on those which have been most thoroughly investigated or which may be best suited to illustrate the various principles of insect transmission. Then too, in discussion of a disease only those facts relevant to insect transmission have been included and much information of general interest in plant pathology has been purposely omitted. In numerous cases, however, suitable references to such information have been given. In like manner, no complete technical descriptions of the insect vectors have been included since information of this kind can be readily obtained from standard entomological texts or from special references cited. In addition to very full and complete introductory matter, the various chapter subdivisions of the book include discussion of such subjects as the interrelationships of plants and insects; symbiosis between insects and microorganisms and its significance in plant pathology; the relation of insects to the spread and development of plant diseases; plant diseases caused by toxicogenic insects; insects and bacterial diseases; insects and fungus diseases; insects and virus diseases; insects and phytopathogenic Protozoa; mites, nematodes, and other small animals as vectors of plant diseases; the anatomy and physiology of plants in relation to infection and insect vectors; the anatomy and physiology of insects in relation to the transmission of plant diseases; the Inocula of plant pathogens in relation to insect transmission; the feeding and breeding habits of insects in relation to the transmission of plant diseases; insect transmission of animal diseases compared with insect transmission of plant diseases; and, methods useful in the study of insect transmission of plant diseases. No general bibliography has been given, but following each chapter there appears a list of references, at times of considerable length, pertaining to its subject matter. All people concerned with plant life, its cultivation and protection will find this book a useful source of information.—J. S. W.